

A CHECKLIST OF MITE AND INSECT PESTS OF VEGETABLE, GRAIN AND FORAGE LEGUMES IN PAPUA NEW GUINEA

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ABSTRACT

Over 100 species of both mites and insects have been recorded as feeding on vegetables, grain and forage legumes in Papua New Guinea. A checklist of these pests is presented, giving host plants and localities, and some assessment of the type of damage.

INTRODUCTION

Pests of legumes in Papua New Guinea have only recently received attention from entomologists. This has been as a result of interest in growing field crops such as soybean *Glycine max* (L) Merr. and mung bean *Vigna radiata* (L) Wilczek as well as subsistence crops such as snake bean *Vigna unguiculata* (L) Walp. and winged bean *Psophocarpus tetragonolobus* (L) DC.

Papers by Dun (1951, 1955), Froggatt (1940, 1941), Szent-Ivany (1956, 1959), Szent-Ivany and Catley (1960) and Szent-Ivany and Stevens (1966) make some reference to pests of legumes. Insect pest surveys (Anon. 1970, 1971; Bourke *et al.* 1973) have listed some mite and insect pests of vegetable, grain and forage legumes. Fenner (1974) reviewed mite and insect pests of grain and forage legumes in Papua New Guinea up to 1974, while Lamb (1976) reviewed mite and insect pests of winged bean in Papua New Guinea and elsewhere. This paper is an attempt to summarise information gathered by entomologists, past and present, working in Papua New Guinea. The systematic names of host plants have been used in preference to the common names wherever possible, and have been taken from Verdcourt (1979).

The systematic names of the host plants and their abbreviations are listed below.

<i>Arachis hypogaea</i> Linnaeus	<i>A. hypogaea</i>
<i>Cajanus cajan</i> (Linnaeus) Millspaugh	<i>C. cajan</i>
<i>Canavalia ensiformis</i> (Linnaeus) A.P. de Candolle	<i>C. ensiformis</i>
<i>Canavalia gladiata</i> (N. Jacquin) A.P. de Candolle	<i>C. gladiata</i>
<i>Centrosema pubescens</i> Benthham	<i>C. pubescens</i>
<i>Centrosema</i> sp.	<i>Centrosema</i> sp.
<i>Desmodium canum</i> (J.F. Gmelin) Schinz & Thellung	<i>D. canum</i>
<i>Desmodium intortum</i> (P. Miller) Urban	<i>D. intortum</i>
<i>Glycine max</i> (Linnaeus) Merrill	<i>G. max</i>
<i>Glycine wightii</i> (Wight & Arnott) Verdcourt	<i>G. wightii</i>
<i>Lablab purpureus</i> (Linnaeus) Sweet	<i>L. purpureus</i>

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Lupinus sp.*Macroptilium atropurpureum* (A.P. de Candolle) Urban*Macroptilium lathyroides* (Linnaeus) Urban*Macrotyloma axillare* (E. Meyer) Verdcourt*Medicago sativa* Linnaeus*Mucuna pruriens* (Linnaeus) A.P. de Candolle*Pachyrhizus erosus* (Linnaeus) Urban*Phaseolus coccineus* Linnaeus*Phaseolus vulgaris* Linnaeus*Pisum sativum* Linnaeus*Psophocarpus tetragonolobus* (Linnaeus) A.P. de Candolle*Pueraria phaseoloides* (Roxburgh) Benth*Pueraria* sp.*Vicia faba* Linnaeus*Vigna angularis* (Willdenow) Ohwi & Ohashi*Vigna mungo* (Linnaeus) Hepper*Vigna parkeri* J.G. Baker*Vigna radiata* (Linnaeus) Wilczek*Vigna umbellata* (Thunberg) Ohwi & Ohashi*Vigna unguiculata* (Linnaeus) Walpers*Vigna vexillata* (Linnaeus) A. Richard*Lupinus* sp.*M. atropurpureum**M. lathyroides**M. axillare**M. sativa**M. pruriens**P. erosus**P. coccineus**P. vulgaris**P. sativum**P. tetragonolobus**P. phaseoloides**Pueraria* sp.*V. faba**V. angularis**V. mungo**V. parkeri**V. radiata**V. umbellata**V. unguiculata**V. vexillata*

Names of the provinces of Papua New Guinea have been abbreviated as follows: Central Province CP, Eastern Highlands Province EHP, East New Britain Province ENBP, East Sepik Province ESP, Enga Province EP, Gulf Province GP, Madang Province MdP, Manus Province MnP, Milne Bay Province MBP, Morobe Province MP, New Ireland Province NIP, North Solomons Province NSP, Northern Province NP, Simbu Province SP, Southern Highlands Province SHP, West New Britain Province WNB, West Sepik Province WSP, Western Highlands Province WHP, Western Province WP.

The source of the data is acknowledged where possible in the column headed 'source'. The insect pest surveys are abbreviated as Anon. 1970, etc. and Konedobu records as K.

The names of the entomologists are abbreviated as follows:

Ardley, J.	J.A.
Catley, A.	A.C.
Dun, G.	G.D.
Fenner, T.L.	T.F.
Froggatt, J.L.	J.L.F.
Gagne, W.	W.G.
van S. Greve, J.E.	J.V.G.
Khan <i>et. al.</i>	T.K.
Lamb, K.P.	K.L.
Smith, E.S.C.	S.C.S.
Smith, S.L.	S.L.S.
Thistleton, B.M.	B.T.
Stevens, R.M.	R.M.S.
Szent-Ivany, J.J.H.	J.S.I.
Young, G.R.	G.Y.

Order Family	Genus and Species	Host Plant Species	Locality	Source	Damage
Acari Prostigmata Tetranychidae	<i>Tetranychus</i> spp.	<i>P. vulgaris</i>	Bubia MP	G.Y.	Leaves blotchy, webbing.
			Wau MP	W.G.	Leaf chlorosis.
			Sanga NP	Anon. 1970	Heavy damage.
			Wau MP	W.G.	Leaf chlorosis.
Orthoptera Acrididae	<i>Valanga</i> sp.	<i>P. sativum</i> <i>P. tetragonolobus</i>	Wapenamanda EP	B.T.	Leaves blotchy, much webbing.
			?	K.L.	?
			Bubia MP	G.Y.	Leaves blotchy, webbing.
			Bubia MP	G.Y.	Nymphs feeding on leaves and flowers.
Gryllotalpidae	<i>Gryllotalpa africana</i> Palisot de Beauvois	<i>P. vulgaris</i> <i>V. radiata</i> <i>A. hypogaea</i>	"	"	"
			"	"	"
			Mt. Hagen WHP	B.T.	Adults feeding on shell and kernel.
			Bubia MP	G.Y.	Feeding on leaves, damage slight.
Tettigoniidae	<i>Phaneroptera brevis</i> Audinet-Serville	<i>C. cajan</i> <i>M. sativa</i> <i>P. vulgaris</i> <i>P. tetragonolobus</i>	Mutzing MP	"	Feeding on leaves.
			Wau MP	W.G.	Feeding on foliage.
			Sila NP	Anon. 1970	Feeding on leaves, damage slight.
			Bubia MP	G.Y.	Feeding on leaves, damage slight.
Dermaptera Labiduridae	<i>Euborellia annulipes</i> (Lucas)	<i>A. hypogaea</i>	Marambung MP	G.Y.	Adults boring into shells and feeding on kernels.
Thysanoptera Indet. Indet. Indet.	<i>Gen. et sp. indet.</i> <i>Gen. et sp. indet.</i> <i>Gen. et sp. indet.</i>	<i>P. tetragonolobus</i> <i>Lupinus</i> sp. <i>P. tetragonolobus</i>	Mt. Hagen WHP	B.T.	Unknown.
			Tambul WHP	B.T.	Feeding on flowers.
			Unitech, Lae MP	K.L.	?

Order Family	Genus and Species	Host Plant Species	Locality	Source	Damage
Hemiptera- Homoptera Aleyrodidae	Gen. et sp. indet.	<i>P. tetragonolobus</i>	Mt. Hagen WHP	B.T. G.Y.	Feeding on leaves. "
Aphididae	<i>Aphis craccivora</i> Koch	<i>A. hypogaea</i> <i>P. vulgaris</i>	Keravat ENBP Wau MP	J.S.I. 1959 W.G.	? Adults and nymphs sucking sap.
		<i>P. tetragonolobus</i>	?	K.L.	Feeding on buds and stems.
			UPNG, Port Moresby CP	T.K. 1974	Seldom damaging.
		<i>V. radiata</i>	Wau MP	W.G.	Adults and nymphs sucking sap.
		<i>V. unguiculata</i>	Bubia MP Keravat ENBP UPNG, Port Moresby CP	G.Y. G.Y. T.K. 1974	A small proportion of plants severely damaged. Seldom damaging.
		<i>V. vexillata</i>	Bubia MP	G.Y.	Flower buds and young shoots attacked.
	Gen. et sp. indet.	<i>V. unguiculata</i>	Kuk WHP	B.T.	Adults and nymphs sucking sap.
	Gen. et sp. indet.	<i>P. tetragonolobus</i>	Kuk WHP	B.T.	Adults and nymphs sucking sap.
	Gen. et sp. indet.	<i>Lupinus</i> sp.	Tambul WHP	B.T.	Adults and nymphs sucking sap.
	Gen. et sp. indet.	<i>Pueraria</i> sp.	Bubia MP	G.Y.	Adults and nymphs sucking sap.
Cicadellidae	? <i>Empoasca</i> sp.	<i>P. tetragonolobus</i>	Wau MP	W.G.	Adults and nymphs sucking sap.
	<i>Eurythroneura</i> sp.	<i>P. tetragonolobus</i>	Aiyura EHP Bena Bena EHP	G.Y.	Feeding on the under- sides of leaves, significant damage.

	? <i>Tartessus</i> sp.	<i>V. unguiculata</i>	Wau MP	W.G.	Adults and nymphs sucking sap.
	<i>Zygina</i> sp.	<i>P. tetragonolobus</i>	Bubia MP	G.Y.	Feeding on the undersides of leaves.
Pseudococcidae	<i>Ferrisia virgata</i> (Cockerell)	<i>C. cajan</i>	Wau MP	G.Y.	None.
	<i>Planococcus ? citri</i> (Risso)	<i>C. cajan</i>	Bubia MP	G.Y.	None.
		<i>G. max</i>	Wau MP	G.Y.	None.
			Bubia MP	G.Y.	Feeding on stems.
			Markham Valley MP	G.Y.	Populations were often high but no evidence of yield loss.
Ricanidae		<i>P. erosus</i>	Wau MP	G.Y.	None.
			Bubia MP	G.Y.	None.
			Ramu Valley MP	G.Y.	None.
	<i>Euricania villica</i> Stal	<i>P. vulgaris</i>	Wau MP	W.G.	Adults and nymphs sucking sap.
	<i>Ricania</i> sp.	<i>V. unguiculata</i>	Wau MP	W.G.	Adults and nymphs sucking sap.
Hemiptera- Heteroptera Alydidae	<i>Melanacanthus margineguttatus</i> Distant	<i>C. cajan</i>	Mutzing MP	G.Y.	Adults and nymphs sucking pods.
		<i>V. mungo</i>	Mutzing MP	G.Y.	" "
		<i>V. unguiculata</i>	Mutzing MP	G.Y.	" "
		<i>C. cajan</i>	Laloki, CP	G.Y.	" "
	<i>Riptortus annulicornis</i> Boisduval		Bubia MP	"	Adults and nymphs sucking pods, damage often severe, up to 90% of seeds damaged or destroyed.
			4-Mile, Lae MP	"	" "
			Maralumi MP	"	" "
			Mutzing MP	"	" "
			Wau MP	"	" "
			Markham Valley MP	G.Y.	" "
		<i>C. pubescens</i>	Wampit MP	"	" "
				G.Y.	" "

Order Family	Genus and Species	Host Plant Species	Locality	Source	Damage
Hemiptera- Heteroptera Alydidae	<i>Riptortus annulicornis</i> Boisduval	<i>G. max</i>	Bubia MP	G.Y.	Adults and nymphs sucking pods, damage often severe, up to 70% of seed shrivelled.
			Markham Valley MP	G.Y.	?
		<i>L. purpureus</i>	Wau MP	G.Y.	?
			Laloki CP	G.Y.	?
			Bubia MP	G.Y.	?
			Maralumi MP	G.Y.	?
		<i>M. lathyroides</i>	Mutzing MP	G.Y.	?
			Bubia MP	G.Y.	?
			Markham Valley MP	G.Y.	?
		<i>P. vulgaris</i>	Bubia MP	G.Y.	Adults and nymphs sucking pods.
			Wau MP	W.G.	Adults and nymphs suck pods, distort beans and allow pathogens to enter.
	Popondetta NP		Anon. 1971	Adults feeding on developing and ripe pods, damage severe.	
	<i>P. tetragonolobus</i>	Bubia MP	G.Y.	Adults and nymphs sucking pods, damage not as severe as with other species of bean.	
		Wau MP	W.G.	Adults and nymphs suck pods, distort beans and allow entry of pathogens.	
		Bubia MP	G.Y.	Adults and nymphs sucking pods.	

<i>V. mungo</i>	Bubia MP	G. Y.	Adults and nymphs sucking pods.
	Markham		" "
	Valley MP	G. Y.	Adults and nymphs sucking pods.
<i>V. radiata</i>	Bubia MP	G. Y.	" "
	Laloki CP	G. Y.	?
	" "	K.	?
<i>V. unguiculata</i>	Bubia MP	G. Y.	Adults and nymphs sucking pods, damage severe.
	Markham		Adults and nymphs sucking pods, distorting seeds and allowing pathogens to enter.
	Valley MP		Adults and nymphs sucking pods.
	Wau MP	W. G.	
	Madang MdP	G. Y.	
	Hermit		
	islands MnP	J. A.	?
	Maron island MnP	J. A.	?
	EP	K.	?
	Mt. Hagen WHP	B. T.	?
	Mt. Hagen WHP	G. Y.	Sucking pods.
	Imia EP	B. T.	Sucking pods.
	Imia EP	G. Y.	" "
	Kuk WHP	B. T.	?
	Aiyura EHP	S. C. S.	Sucking pods.
<i>Riptortus imperialis</i> Kirkaldy	G. max		
	<i>P. vulgaris</i>		
	<i>V. umbellata</i>		
<i>Riptortus obscuricornis</i> Dallas	G. max		

Order Family	Genus and Species	Host Plant Species	Locality	Source	Damage
Hemiptera- Heteroptera Alydidae		<i>P. vulgaris</i>	Imia EP	B.T.	Sucking pods.
			Imia EP	G.Y.	" "
			Keravat ENBP	K.	?
			Vudal ENBP	G.Y.	Adults and nymphs sucking pods.
					" "
			Aropa NSP	G.Y.	" "
			Rigu NSP	G.Y.	" "
			Bubia MP	G.Y.	Adults and nymphs sucking pods.
					" "
			Mutzing MP	G.Y.	" "
			Wau MP	G.Y.	" "
			Bubia MP	G.Y.	" "
			Mutzing MP	G.Y.	" "
Coreidae			Bubia MP	G.Y.	" "
			Mutzing MP	G.Y.	" "
			Wau MP	W.G.	" "
			Vudal ENBP	G.Y.	Adults and nymphs sucking pods.
					" "
			Aropa NSP	G.Y.	" "
			Vudal ENBP	G.Y.	" "
			Aropa NSP	G.Y.	" "
			Wau MP	W.G.	Adults and nymphs attacking shoots and pods.
					On pods, not known if insects were feeding.
			Bubia MP	G.Y.	Adults sucking pods.
			Bubia MP	G.Y.	Adults sucking pods.
			Mutzing MP	G.Y.	Sucking exudate from lesions on young shoots and pods.
			Bubia MP	G.Y.	

Lygaeidae	<i>Mictis profana</i> (Fabricius)	<i>C. cajan</i>	Bubia MP	G.Y.	Adults and nymphs feed on shoots causing shoots to wilt. Damage sometimes severe.
	<i>Nysius epiensis</i> China	<i>A. hypogaea</i>	Markham Valley MP	G.Y.	
	<i>Nysius</i> sp.	<i>P. vulgaris</i>	Bubia MP	J.S.I. 1960	?
			Bubia MP	A.C. 1960	Yellow spotting on leaves.
			Mutzing MP	G.Y.	" "
			Sila NP	Anon. 1970	Caused yellow spotting on leaves.
	<i>Pachybrachius nervosus</i> P. <i>vulgaris</i> Horvath		Sila NP	Anon. 1970	" "
	<i>Halictus tibialis</i> Reuter	<i>A. hypogaea</i>	Bubia MP	G.Y.	Yellow spotting on leaves.
			Keravat ENBP	J.S.I. 1956	?
		<i>G. max</i>	Bubia MP	G.Y.	Yellow spotting on leaves.
Miridae			Wau MP	W.G.	Adults and nymphs suck sap. Caused leaf chlorosis when populations were high.
		<i>P. erosus</i>	Bubia MP	G.Y.	Severe damage to leaves.
		<i>P. vulgaris</i>	Bubia MP	G.Y.	Severe damage to leaves at times.
				W.G.	Adults and nymphs suck sap. Caused leaf chlorosis when populations were high.
		<i>V. umbellata</i>	Keravat ENBP	J.S.I. 1956	?

Order Family	Genus and Species	Host Plant Species	Locality	Source	Damage
Hemiptera- Heteroptera Miridae	<i>Halticus tibialis</i> Reuter	<i>V. unguiculata</i>	Bubia MP	G.Y.	Severe damage to leaves at times.
	<i>Halticus</i> sp.				
	<i>Helopeltis clavifer</i> Walker	<i>V. unguiculata</i>	Aropa NSP Rigu NSP ? Wau MP	G.Y. G.Y. J.L.F. 1940 W.G.	Severe damage to leaves. " " ? Adults and nymphs sucking sap of growing points.
	<i>Creontiades pallidifer</i> Walker	<i>V. angularis</i>	Mutzing MP	G.Y.	Feeding on flowers, damage unknown.
Pentatomidae	<i>Agapophyta similis</i> Blöte	<i>C. cajan</i>	Kar Kar Is. Mdp	J.S.I. & R.M.S. 1966	? Adults and nymphs sucking sap, attacking shoots and flower buds. Often causing severe damage and death of plants.
	<i>Agapophyta</i> sp.	<i>C. cajan</i>	Bubia MP Cleanwater MP Maralumi MP Mutzing MP Wau MP	G.Y. G.Y. G.Y. G.Y. G.Y.	Sucking sap. Adults and nymphs sucking sap.
	? <i>Allocotus</i> sp.	<i>V. unguiculata</i>	Wau MP Wau MP	W.G. W.G.	?
	<i>Nezara viridula</i> (Linnaeus)	<i>C. cajan</i> <i>G. max</i>	Asaro EHP Aiyura EHP Bubia MP Markham Valley MP	K. S.C.S. G.Y. G.Y.	Slight damage. Adults and nymphs sucking pods, up to 70% of seed shrivelled.

<i>L. purpureus</i>	Wau MP	G.Y.	Sometimes feeding on flowers resulting in reduced fruit set. Adults and nymphs sucking pods.
	Laloki CP	G.Y.	" "
	Bubia MP	G.Y.	" "
	Markham		" "
	Valley MP	G.Y.	" "
<i>P. vulgaris</i>	Tapini CP	K.	?
	Vudal ENBP	G.Y.	Sucking pods.
	Bubia MP	G.Y.	" "
	Markham		" "
	Valley MP	G.Y.	" "
	Wau MP	G.Y.	" "
		W.G.	" "
	Rigu NSP	G.Y.	Adults and nymphs sucking pods.
	Sila NP	Anon. 1970	Sucking pods.
<i>P. tetragonolobus</i>			Adults feeding on ripening pods.
	Bubia MP	G.Y.	Sucking pods.
	Mt. Hagen WHP	G.Y.	" "
<i>V. faba</i>	Wau MP	W.G.	" "
			Nymphs and adults sucking pods.
<i>V. angularis</i>	Bubia MP	G.Y.	Sucking pods.
<i>V. mungo</i>	Bubia MP	G.Y.	Sucking pods.
<i>V. radiata</i>	Bubia MP	G.Y.	Sucking pods.
	Wau MP	W.G.	Adults and nymphs sucking pods.
	Aropa NSP	G.Y.	Adults and nymphs sucking pods.
<i>V. umbellata</i>	Rigu NSP	G.Y.	" "
	Bainyik ESP	K.	?

Order Family	Genus and Species	Host Plant Species	Locality	Source	Damage
Hemiptera- Heteroptera Pentatomidae	<i>Nezara viridula</i> (Linnaeus)	<i>V. unguiculata</i>	Laloki CP	T.F.	?
			Bubia MP	G.Y.	Adults and nymphs sucking pods, causing severe damage.
			Markham Valley MP	G.Y.	Occasionally feeding on flower buds and reducing fruit set.
			Wau MP	G.Y.	Adults and nymphs sucking pods.
			"	W.G.	Adults and nymphs sucking pods.
			Aropa NSP	G.Y.	Adults and nymphs sucking pods.
	<i>Oncocoris</i> sp. near <i>coelebs</i> (Fabricius)	<i>V. radiata</i>	Rigu NSP	G.Y.	"
			Mt. Hagen WHP	B.T.	On cow pea.
			?	J.L.F. 1941	?
			Bubia MP	G.Y.	Adults and nymphs sucking pods, damage slight.
			Bubia MP	G.Y.	"
			Chambri ESP	J.S.I. & A.C. 1960	"
	<i>Philia femorata</i>	<i>V. unguiculata</i> <i>A. hypogaea</i>	Bubia MP	G.Y.	?
			Bubia MP	G.Y.	Adults and nymphs sucking pods, damage slight.
			Bubia MP	G.Y.	"
			Bubia MP	G.Y.	"
			Bubia MP	G.Y.	"
			Bubia MP	G.Y.	"
	<i>Piezodorus</i> sp. near <i>rubrofasciatus</i> (Fabricius)	<i>V. radiata</i>	Bubia MP	G.Y.	Adults and nymphs sucking pods, damage slight.
			Bubia MP	G.Y.	"
			Bubia MP	G.Y.	"
	<i>Plautia brunneipennis</i> Stal	<i>V. unguiculata</i> <i>P. vulgaris</i>	Bubia MP	G.Y.	Adults and nymphs sucking sap.
			Bubia MP	G.Y.	"
	<i>V. radiata</i>	<i>V. radiata</i>	Bubia MP	G.Y.	"
			Bubia MP	G.Y.	"

Plataspidae	<i>V. unguiculata</i>	Bubia MP Wau MP	G.Y. G.Y.	" "	" "
	<i>Brachyplatys papuus</i> Guérin-Meneville	Mageri CP	J.S.I. 1959	?	Very dense populations.
	<i>Brachyplatys</i> sp.	Bubia MP	G.Y.		Sucking sap, damage unknown.
		Markham Valley MP	G.Y.	"	"
		Wau MP	G.Y.	"	"
	<i>P. vulgaris</i>	?	J.L.F. 1940	?	
	<i>M. pruriens</i>	Wau MP	W.G.		Adults and nymphs sucking sap.
	<i>Coptosoma pygmaeum</i> Montandon	Bonahoi ESP	J.S.I. 1959	?	
	<i>P. phaseoloides</i>	Kapsu Pltn. NIP	J.S.I. 1956	?	
	<i>Phaseolus</i> sp.	"	"	?	
Diptera Agromyzidae	<i>C. cajan</i>	Bubia MP	G.Y.		Sucking sap, damage unknown.
		Markham Valley MP	G.Y.	"	"
		Bubia MP	G.Y.		Sucking sap, damage unknown.
		Bubia MP	G.Y.		Damage slight.
	<i>G. max</i>	Mutzing MP	G.Y.	"	"
		Wau MP	W.G.		Larvae mining stems of seedlings.
		Bubia MP	G.Y.		Larvae mining stems, heavily infested during dry periods.
	<i>M. lathyroides</i>				
		Markham Valley MP	G.Y.		Heavily infested.
	<i>P. vulgaris</i>	Laloki CP	G.Y.	?	

Order Family	Genus and Species	Host Plant Species	Locality	Source	Damage
Diptera Agromyzidae	<i>Ophiomyia phaseoli</i> (Tryon)	<i>P. vulgaris</i>	Rigo CP	T.F.	Serious stunting and distortion.
			Waigani CP	T.K. 1974	?
			Keravat ENBP	G.D. 1951	?
			Bubia MP	G.Y.	Larvae mining stems, up to 100% mortality of seedlings.
			Wau MP	W.G.	Larvae mining the stems of seedlings.
			Wau MP	J.S.I. & R.M.S.	
			Popondetta NP	1966	Severe damage to roots.
			Banz WHP	Anon. 1971	Severe damage.
				B.T.	Larvae feeding in stems of seedlings.
				"	"
	<i>V. angularis</i>		Kuk WHP	B.T.	Larvae mining stems of seedlings, up to 100% mortality.
			Bubia MP	G.Y.	Damage slight.
	<i>V. radiata</i>		Bubia MP	G.Y.	Damage slight.
			Mutzing MP	G.Y.	Larvae mining stems of seedlings.
			Wau MP	W.G.	Larvae mining stems of seedlings.
	<i>V. unguiculata</i>		Bubia MP	G.Y.	Larvae mining stems and petioles.
			Mutzing MP	G.Y.	Sometimes severe damage during dry periods. Some varieties were more susceptible than others.

Coleoptera Anobiidae	<i>Lasioderma serricorne</i> (Fabricius)	<i>P. sativum</i>	Waigani CP	J.V.G.	Seed in storage.
	<i>Araeocorynus</i> sp. nr. <i>cumingi</i> Jekel	<i>P. tetragonolobus</i>	Waigani CP	J.V.G.	Seed in storage.
Anthrribidae	<i>Araeocorynus</i> sp.	<i>P. tetragonolobus</i>	Mt. Hagen WHP	J.V.G.	Seed in storage.
	<i>Araecerus fasciculatus</i> Degeer	<i>P. tetragonolobus</i>	Mt. Hagen WHP	J.V.G.	Seed in storage.
Bruchidae	<i>Acanthoscelides</i> <i>obtectus</i> (Say)	<i>G. max</i>	Mt. Hagen WHP	J.V.G.	Seed in storage.
	<i>Callosobruchus analis</i> (Fabricius)	<i>V. radiata</i>	Port Moresby CP Quarantine detection	J.V.G.	Seed.
Coleoptera Chrysomelidae	<i>Callosobruchus</i> <i>chinensis</i> (Linnaeus)	<i>P. sativum</i> and other legume seeds	Keravat ENBP	G.D. 1955	Seed in storage.
	<i>Callosobruchus</i> <i>maculatus</i> (Fabricius)	<i>V. radiata</i>	Port Moresby CP	J.V.G.	Seed in storage.
Coleoptera Chrysomelidae	<i>Arsipoda tenimberensis</i> (Jacoby)	<i>G. max</i>	Wanepakosa EP Wau MP	B.T. W.G.	Feeding on leaves. "
			Mendi SHP	B.T.	"
			Dei WHP	B.T.	"
			Kuk WHP	B.T.	"
			Ogelbeng WHP	B.T.	"
			Wanepakosa EP	B.T.	Feeding on leaves.
			Wau MP	W.G.	"
			Mendi SHP	B.T.	"
			Dei WHP	B.T.	"
			Kuk WHP	B.T.	"
			Ogelbeng WHP	B.T.	"
	<i>P. vulgaris</i>				

Order Family	Genus and Species	Host Plant Species	Locality	Source	Damage
Coleoptera Chrysomelidae					
	<i>Aphthona bicolorata</i> Jacoby	<i>M. atropurpureum</i>	?	K.	Chewing holes in foliage.
	<i>Aulacophora coffeae</i> (Hornstedt)	<i>A. hypogaea</i>	Bubia MP	G.Y.	Feeding on leaves, damage slight.
	<i>Aulacophora femoralis</i> Motschulsky	<i>V. radiata</i> <i>M. sativa</i>	Bubia MP Wakepakosa EP Wau MP	G.Y. B.T. W.G.	" Feeding on leaves. "
			Mendi SHP	B.T.	"
			Dei WHP	B.T.	"
			Kuk WHP	B.T.	"
			Ogelbeng WHP	B.T.	"
	<i>Aulacophora</i> <i>pallidofasciata</i> Jacoby	<i>G. max</i>	Popondetta NP	K.	?
		<i>P. vulgaris</i>	Sila NP	Anon. 1970	Adults collected from foliage.
	<i>Aulacophora papuana</i> Jacoby	<i>P. vulgaris</i>	Sila NP	Anon. 1970	Adults collected from foliage.
	<i>Aulacophora similis</i> Oliver	<i>V. faba</i>	Sila NP	Anon. 1970	Feeding on leaves and petioles, complete defoliation.
	<i>Aulacophora wallacei</i> Baly	<i>V. radiata</i>	Aiyura EHP	K.	Feeding on leaves, damage slight.
	<i>Cassena papuana</i> (Jacoby)	<i>P. vulgaris</i>	Aiyura EHP Bubia MP Wau MP	S.C.S. G.Y. W.G.	Feeding on leaves. "
		<i>V. faba</i> <i>V. radiata</i>	Wau MP Aiyura EHP Bubia MP Mutzing MP	S.C.S. G.Y. G.Y.	Feeding on leaves. Feeding on leaves, defoliation sometimes severe in the seedling stage.

Coleoptera Coccinellidae	<i>Monolepta nigroapicata</i> Bryant	<i>V. unguiculata</i>	Bubia MP Mutzing MP Wau MP Bubia MP	G.Y. W.G. W.G. G.Y.	Feeding on leaves. " " Feeding on leaves.
		<i>G. max</i>			
		<i>V. radiata</i>	Bubia MP Wau MP Gusap MP	G.Y. G.Y. G.Y.	" " Feeding on shoots, damage severe. "
		<i>G. max</i>			
	<i>Rhypanida coriacea</i> Jacoby	<i>V. radiata</i>	Gusap MP	G.Y.	Shot hole damage to foliage.
		<i>G. max</i>	Mendi SHP	B.T.	Minor shot hole damage to foliage. "
	<i>Solenia intermedia</i> Jacoby	<i>P. vulgaris</i>	Wanepakosa EP	B.T.	" "
			Dei WHP Ogelbeng WHP Kuk WHP	B.T. B.T. B.T.	Minor shot hole damage to foliage.
	<i>P. tetragonolobus</i>				
	<i>Henosepilachna signatipennis</i> (Boisduval)	<i>Centrosema</i> sp.	Rorona Plantation CP	K.	?
			Aiyura EHP	Anon. 1970	Adults and larvae feeding on leaves.
			Bubia MP	G.Y.	Adults and larvae feeding on leaves.
			Cleanwater, Markham Valley MP		
	<i>M. lathyroides</i>		Maralumi MP	G.Y. K.	" Feeding on foliage.
			Markham Valley MP	G.Y.	Adults feeding on leaves.

Order Family	Genus and Species	Host Plant Species	Locality	Source	Damage
Coleoptera Coccinellidae	<i>Henosepilachna signatipennis</i> (Boisduval)	<i>P. phaseoloides</i>	Kulili Pltn. Kar Kar Is. MdP Bubia MP	K. G.Y.	Adults and larvae feeding on leaves.
		<i>P. vulgaris</i>	17 Mile Port Moresby CP	K. J.S.I. 1959 Anon. 1971 Anon. 1969 G.Y.	Adults feeding on foliage. Adults feeding on foliage. Adults and larvae feeding on leaves, shoots, flowers and immature fruit.
			Awala NP Popondetta NP Sila NP Bubia MP	W.G. G.Y.	Adults and larvae feeding on leaves. Adults and larvae feeding on leaves, shoots, flowers and immature fruit.
		<i>P. tetragonolobus</i>	Wau MP Bubia MP	G.Y.	Adults and larvae feeding on foliage. Adults and larvae feeding on leaves, shoots, flowers and immature fruit.
		<i>V. angularis</i>	Kuk WHP Bubia MP	B.T. G.Y.	Adults and larvae feeding on foliage. Adults and larvae feeding on leaves.
		<i>V. radiata</i>	Bubia MP Marambung MP Mutzing MP	G.Y. G.Y. G.Y.	Adults feeding on leaves " " " "
		<i>V. umbellata</i>	Oriomo, Agricultural Station WP	J.S.I.	Feeding on foliage.

	<i>V. unguiculata</i>	Brown River CP Laloki CP Bubia MP Markham Valley MP Wau MP	J.S.I. G.Y. G.Y. G.Y. G.Y. G.Y.	Feeding on foliage. Adults and larvae feeding on leaves, shoots, flowers and immature fruit. Damage sometimes severe. Feeding on leaves.
	<i>V. radiata</i>	Marambung MP	G.Y.	Feeding on leaves.
	<i>M. atropurpureum</i>	?	K.	Feeding on leaves.
	<i>G. max</i>	Aiyura EHP	S.C.S.	Adults feeding on leaves, damage minor.
	<i>V. radiata</i>	Aiyura EHP	S.C.S.	"
	<i>A. hypogaea</i>	Atzera MP	J.V.G.	Shelled seed peanuts in storage.
	<i>A. hypogaea</i>	Atzera MP	J.V.G.	Peanut kernels in storage.
	<i>V. radiata</i>	Wau MP	W.G.	Adults feeding on leaves.
	<i>V. radiata</i>	Wau MP	W.G.	Adults feeding on leaves.
	<i>V. unguiculata</i>	Wau MP	W.G.	" "
	<i>P. phaseoloides</i>	Brown River CP	J.S.I. 1959	?
	<i>P. vulgaris</i>	Mul WHP	B.T.	Minor shot hole damage.
	<i>G. max</i>	Mendi SHP	B.T.	Minor shot hole damage to foliage.
	<i>P. vulgaris</i>	Ogelbeng WHP	B.T.	"
	<i>P. tetragonolobus</i>	Kuk WHP	B.T.	"
Coleoptera	<i>Henosepilachna</i> ? 28			
Alticidae	<i>punctata</i> (Fabricius)			
	<i>Psylliodes</i>			
	<i>brettinghami</i> Baly			
Lagriidae	<i>Largia</i> sp.			
Nitidulidae	<i>Carpophilus</i> sp.			
Silvanidae	<i>Ahaversus advena</i> (Waltl)			
Curculionidae	<i>Apirocalus cornutus</i> (Pascoe)			
	<i>Oribius cinereus</i> Marshall			
	<i>Oribius cruciatus</i> Faust			
	<i>Oribius</i> ? <i>guttiger</i> Blanchard			
	<i>Oribius inimicus</i> Marshall			

Order Family	Genus and Species	Host Plant Species	Locality	Source	Damage
Coleoptera Silvanidae	<i>Oryzaephilus mercator</i> (Fauvel)	<i>A. hypogaea</i>	Atzera MP	J.V.G.	Peanut kernels in storage.
Tenebrionidae	<i>Caedius demeijerei</i> Gebien	?	?	K.	Damaging seedlings.
	<i>Tribolium castaneum</i> (Herbst)	<i>A. hypogaea</i>	Poligolo CP	J.V.G.	Peanuts in storage.
Trogossitidae	<i>Tenebroides</i> <i>mauritanicus</i> Linnaeus	<i>A. hypogaea</i>	Atzera MP	J.V.G.	Peanuts in storage.
Lepidoptera Gracillariidae	<i>Acrocercops caerulea</i> Meyrick	<i>P. coccineus</i>	Abanaka MP	G.Y.	Larvae mining leaves, damage slight.
		<i>P. vulgaris</i>	Bubia MP	G.Y.	" "
		<i>V. umbellata</i>	Bubia MP	G.Y.	" "
		<i>V. unguiculata</i>	Bubia MP	G.Y.	" "
		<i>G. max</i>	Mutzing MP Bubia MP	G.Y. G.Y.	Larvae mining leaves, damage slight.
Geometridae	? <i>Acrocercops</i> sp. ? <i>Caloptila</i> sp.	<i>P. tetragonolobus</i>	Wau MP	W.G.	Larvae leaf rollers.
	<i>Hyposidra talaca</i> (Walker)	<i>V. unguiculata</i>	Wau MP	W.G.	Feeding on leaves.
Lycaenidae	<i>Lampides boeticus</i> Linnaeus	<i>C. cajan</i>	Bubia MP	G.Y.	Larvae feeding on young pods.
		<i>Lupinus</i> sp.	Kerema GP Daulo Pass EHP	J.S.I. 1959 B.T.	Larvae in pods. Larvae feeding on flowers.
		<i>P. tetragonolobus</i>	Bubia MP	G.Y.	Larvae boring pods, causing pods to become

Order Family	Genus and Species	Host Plant Species	Locality	Source	Damage
Lepidoptera Noctuidae	<i>Diachrysia orichalcea</i> Fabricius	<i>G. max</i>	Aiyura EHP	S.C.S.	Larvae feeding on leaves.
	<i>Heliothis armiger</i> Hübner	<i>C. cajan</i>	Bubia MP	G.Y.	Larvae feeding inside pods, damage was severe at times.
		<i>P. vulgaris</i>	Bubia MP	G.Y.	Larvae feeding inside pods.
			Ogelbeng WHP	B.T.	Larvae feeding on foliage.
		<i>P. sativum</i>	Wau MP	W.G.	Larvae feeding on pods.
			Kondepina WHP	B.T.	Larvae feeding inside pods.
		<i>V. unguiculata</i>	Bubia MP	G.Y.	Larvae feeding on flowers and pods.
			Kuk WHP	B.T.	Larvae feeding inside pods.
		<i>P. sativum</i>	Wau MP	W.G.	Larvae feeding on leaves.
		<i>P. tetragonolobus</i> <i>V. angularis</i>	Wapenamanda EP Bubia MP	B.T. G.Y.	Larvae feeding on leaves. Larvae feeding on leaves, damage was usually slight.
Pyralidae		<i>V. radiata</i>	Bubia MP	G.Y.	Larvae feeding on leaves, damage was usually slight.
		<i>V. unguiculata</i>	Bubia MP	G.Y.	" "
	<i>Ephestia cautella</i> (Walker)	<i>A. hypogaea</i>	Atzera MP	J.V.G.	Seed in storage.
		<i>G. max</i> <i>P. sativum</i>	? ?	J.V.G. J.V.G.	Seed in storage. Seed in storage.

<i>Crocidoloma binotalis</i> Zeller	<i>P. tetragonolobus</i>	Kuk WHP	B.T.	Feeding on leaves.
<i>Diaphania indica</i> (Fabricius)	<i>A. hypogaea</i>	Bubia MP Wau MP	G.Y. W.G.	Larvae tying leaves. "
	<i>G. max</i>	Aiyura EHP	S.C.S.	Larvae tying leaves, serious damage.
				Larvae tying leaves. "
	<i>M. sativum</i>	Bubia MP	G.Y.	Larvae tying leaves.
	<i>M. pruriens</i>	Wau MP	W.G.	Larvae tying leaves.
	<i>P. vulgaris</i>	Wau MP	W.G.	Larvae tying leaves. "
	<i>P. sativum</i>	Bubia MP	G.Y.	Larvae tying leaves.
	<i>P. tetragonolobus</i>	Wau MP	W.G.	Larvae tying leaves, occasionally serious damage.
		Bubia MP	G.Y.	Larvae feeding on foliage.
		Kuk WHP	G.Y.	Larvae tying leaves. "
	<i>V. radiata</i>	Bubia MP	G.Y.	Larvae tying leaves. "
	<i>V. unguiculata</i>	Wau MP	W.G.	Larvae tying leaves. "
		Bubia MP	G.Y.	Larvae tying leaves. "
		Wau MP	W.G.	Larvae tying leaves. "
<i>Hedylepta diemenalis</i>	<i>P. tetragonolobus</i>	Unitech, Lae MP	G.Y.	Larvae tying leaves.
	<i>P. phaseoloides</i>	Sowam ESP Saiho NP	S.L.S. Bourke et. al. 1973	Severe damage. Larvae defoliated localised patches.
		P.A.C.	"	"
		Popondetta NP	"	"
	<i>Pueraria</i> sp.	Keravat ENBP	Anon. 1971	?
		Wewak ESP	K.	?

Order Family	Genus and Species	Host Plant Species	Locality	Source	Damage
Lepidoptera Pyralidae	<i>Maruca testulalis</i> (Geyer)	<i>C. cajan</i>	Bubia MP	G.Y.	Larvae feeding on flowers and pods, webbing pods together. Some varieties were more susceptible than others.
		<i>C. ensiformis</i>	4 Mile, Lae MP	G.Y.	Larvae boring pods, damage slight.
		<i>M. pruriens</i>	Wau MP Wau MP	W.G. W.G.	Larvae boring pods. Larvae boring pods, damage severe.
		<i>P. vulgaris</i>	Sogeri CP	Bourke et. al. 1973	Larvae boring pods.
			Bubia MP	G.Y.	" "
			Wau MP	W.G.	" "
			Popondetta NP	Bourke et. al. 1973	" "
		<i>P. tetragonolobus</i>	Bubia MP	G.Y.	Larvae boring pods, damage has been severe on occasions.
			Kuk WHP	B.T.	Larvae feeding on flowers.
		<i>Pueraria</i> sp. <i>V. angularis</i>	Keravat ENBP Bubia MP	Anon. 1971 G.Y.	? Larvae feeding on flowers and pods, webbing pods together. Damage severe.

Tortricidae	<i>V. radiata</i>	Bubia MP	G.Y.	Larvae feeding on flowers and pods, sometimes boring pods.
	<i>V. unguiculata</i>	Bubia MP	G.Y.	Larvae feeding on flowers, boring and webbing pods. Damage was more severe during south-east season.
		Markham Valley MP		
	<i>A. hypogaea</i>	Goroka EHP	G.Y. K.	Larvae boring pods. Feeding on leaves.
	<i>P. tetragonolobus</i>	Kuk WHP	B.T.	Feeding on leaves.
	<i>A. hypogaea</i>	?	J.L.F. 1940	On foliage.
	<i>G. max</i>	Wau MP	W.G.	Feeding on leaves.
	<i>P. sativum</i>	Wau MP	W.G.	Feeding on leaves.
	<i>A. hypogaea</i>	Wau MP	W.G.	Feeding on leaves.
	<i>C. gladiata</i>	Laloki CP	T.F. 1974	Feeding on pods.
	<i>A. hypogaea</i>	Wau MP	W.G.	Feeding on leaves.
	<i>G. max</i>	Wau MP	W.G.	Feeding on leaves.
	<i>M. pruriens</i>	Wau MP	W.G.	Feeding on leaves.
	<i>V. radiata</i>	Wau MP	W.G.	Feeding on leaves.
	<i>V. unguiculata</i>	Wau MP	W.G.	Feeding on leaves.

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